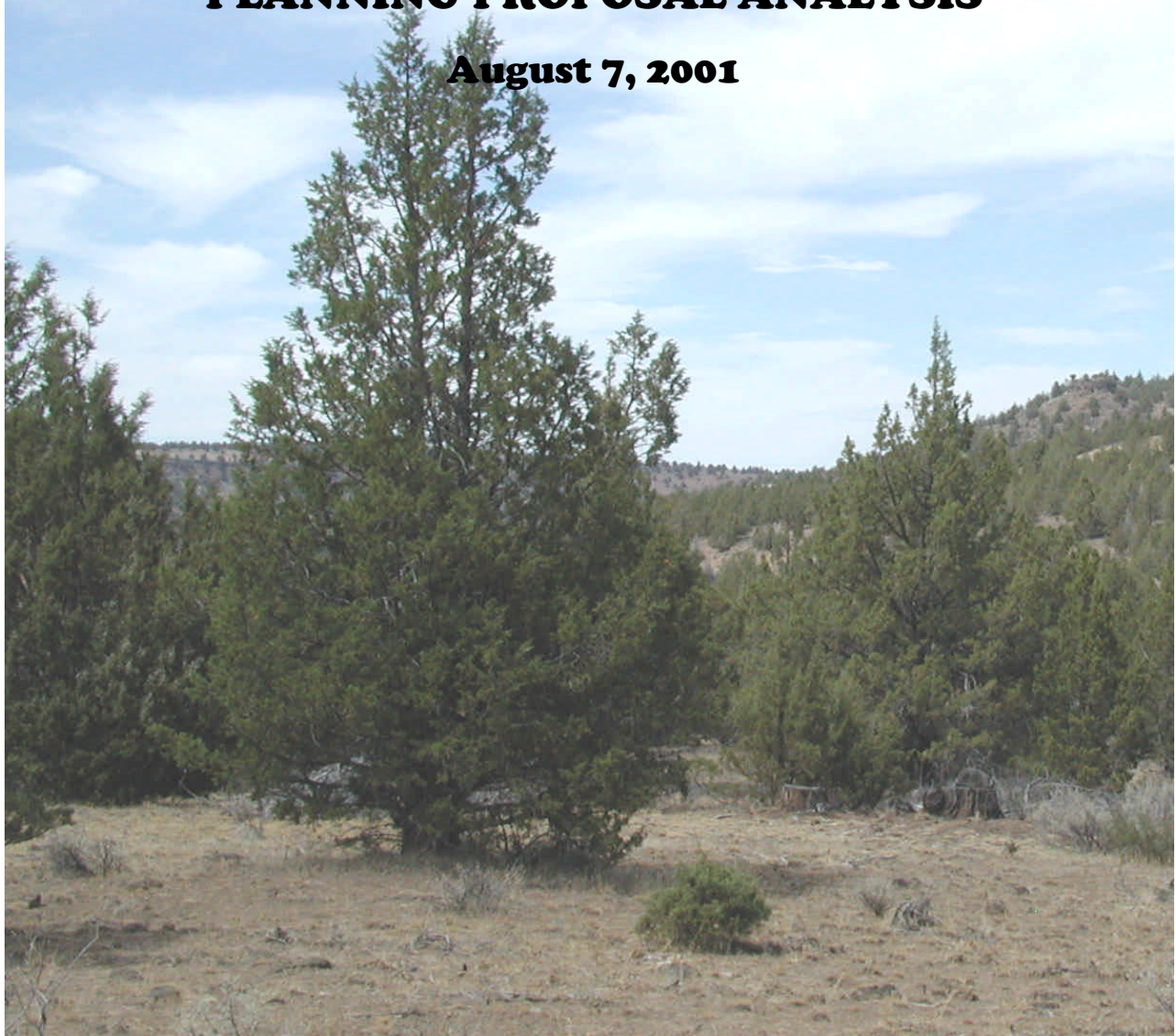


# **WESTERN JUNIPER MANAGEMENT STRATEGY PLANNING PROPOSAL ANALYSIS**

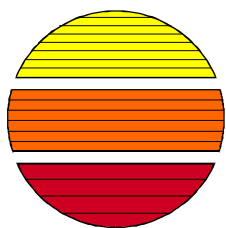
**August 7, 2001**



## **Requested By:**

- North Cal-Neva Resource Conservation & Development Council
- Bureau of Land Management
- United States Forest Service

## **Prepared By:**



*ENGINEERING ♦ PLANNING ♦ RESOURCE MANAGEMENT*

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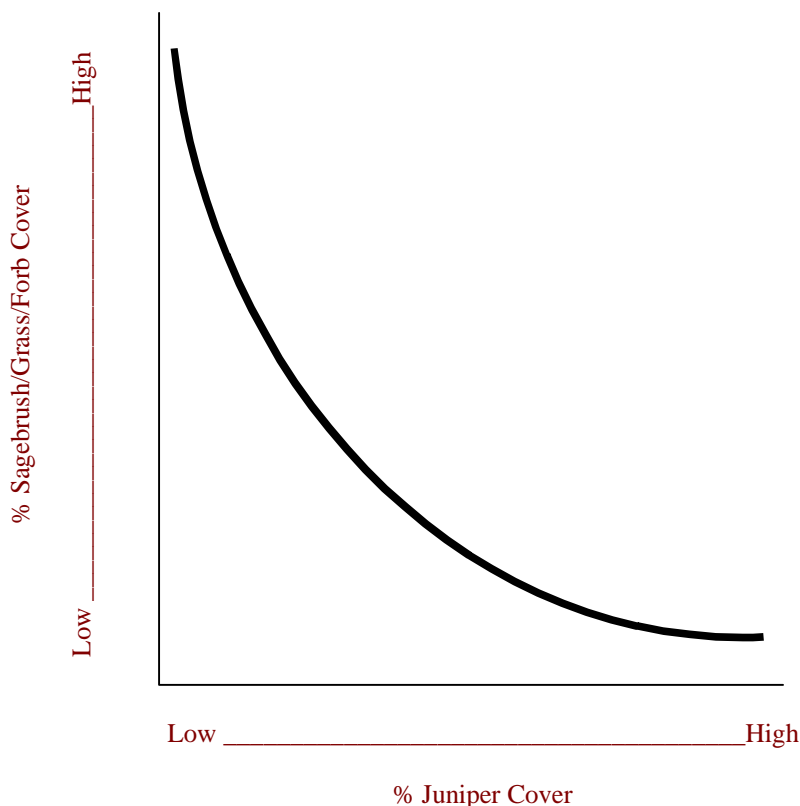
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## The Issue With Western Juniper

It is estimated that western juniper (*Juniperus occidentalis*) currently occupies 2.5 million acres of rangeland in northeastern California and northwestern Nevada. This constitutes a ten-fold expansion of juniper range over the past 130 years. A consequence of this juniper expansion has been a loss of species diversity, productivity and overall rangeland health. As shown in the following graph, sagebrush, grass and forb cover are all reduced as juniper canopy cover increases.



*Adapted from Research by Rick Miller*

According to Rick Miller, a professor of range science at Oregon State University and recognized expert on western juniper, “We have been very successful in reducing the role of fire in the juniper woodland belt in the high desert. Unless additional coordinated western juniper management is undertaken, wildlife habitat, species abundance and diversity, and diversity at the landscape level will continue to decline as juniper woodland canopies close.”

Commenting on the vegetative monocultures that seem to be developing over much of our western rangeland, Neil West, a range management professor at Utah State University remarked, “We’ve moved from the Pleistocene epoch to the Holocene and now we appear to be moving into the Homogecene.”

An example of the degree of juniper encroachment that can occur in less than 70 years is shown on the following page.

## Western Juniper Encroachment – 67 years



**1916 – Near West Valley Reservoir,  
Modoc County, California**  
*(Courtesy McGarva Ranch)*

**1983 – Same Site**  
*(Courtesy McGarva  
Ranch)*



The impact of juniper encroachment on water availability on western rangelands is another area of concern. John Buckhouse, range management professor at Oregon State University and former president of the International Society for Range Management notes that, “Western juniper encroachment into the shrub-steppe communities can have a significant effect on the water cycle.” Buckhouse describes decreased infiltration and increased surface flows on sites dominated by juniper and says, “Sites also become drier with increasing juniper dominance because of interception and evaporation, gully erosion, and a lowering of the capillary fringe associated with influent ground water systems and desert streams.”

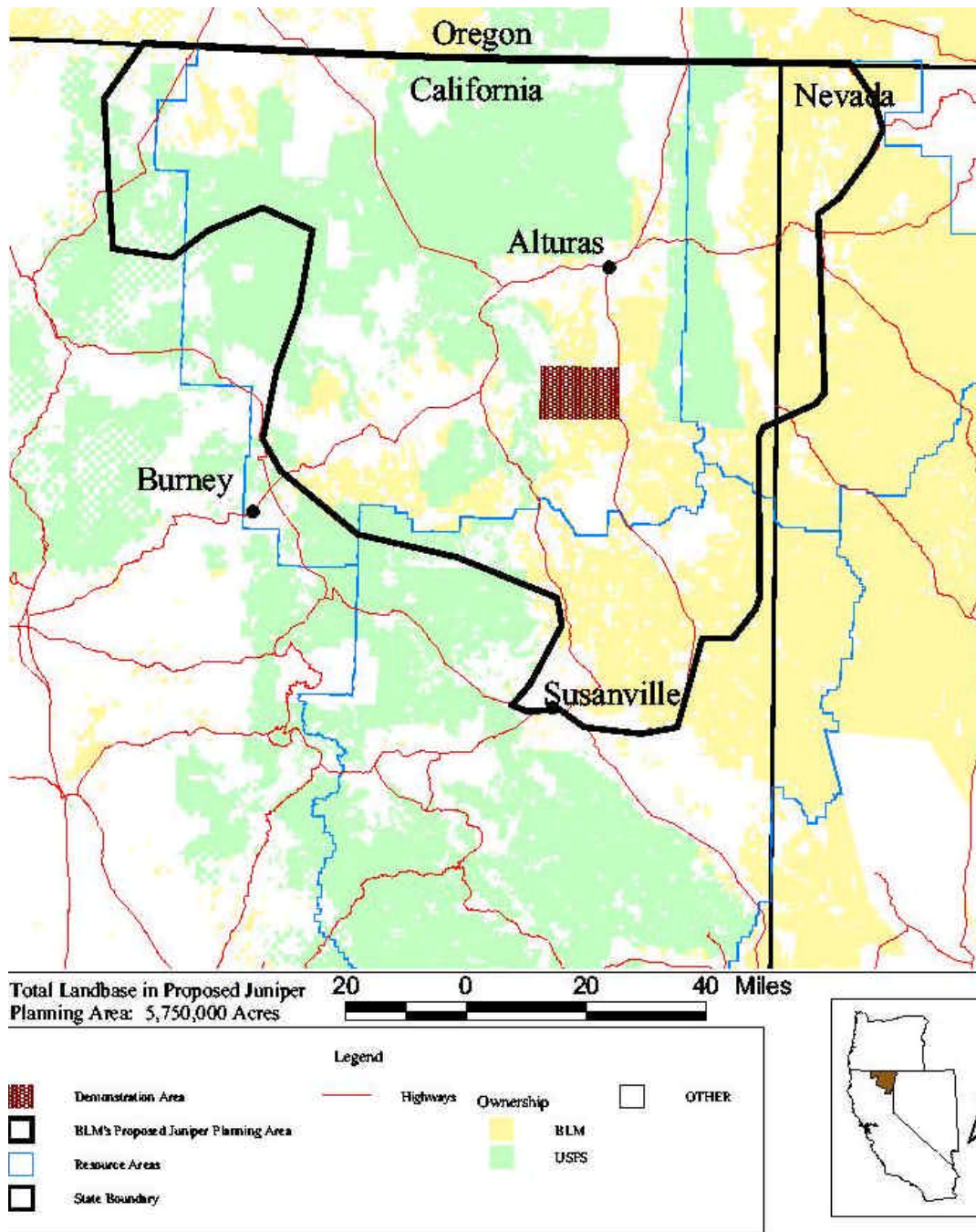
The good news is that juniper encroachment and its effects are reversible. With environmentally sound juniper management, the repressed plant and animal life can be released to flourish again. The overall vibrant and ecologically healthy systems that the sites are fully capable of supporting can be rejuvenated.



# The Planning Proposal

The United States Forest Service and the Bureau of Land Management propose to join forces with the North Cal-Neva Resource Conservation and Development Council to establish a 5.75 million acre juniper planning area in northeastern California and northwestern Nevada as shown on the following map. The planning area includes an estimated 2.5 million acres of the western juniper vegetation type.

**Proposed Juniper Planning Area Map**



Development of a management strategy at this “landscape” level will allow the agencies and the public to take a holistic look at the juniper-sagebrush steppe ecosystem. The planning will result in an integrated approach to juniper management, matching treatment options to landscape type. Some areas will be identified where mechanical treatment such as shearing and chipping is appropriate. Hand treatment, prescribed fire or herbicide use may be the best options elsewhere. Other juniper stands will be identified which should just be left alone.

Much of the information needed for this type of strategy development is already on hand. Remote sensing data depicting juniper canopy cover can be combined with soil survey information and digital elevation models in a Geographic Information System (GIS) to provide a broad picture of juniper management opportunities.

Once an initial management strategy is formulated, it would be presented to the public as a proposed alternative to be analyzed in a regional juniper management environmental impact statement/environmental impact report (EIS/EIR).

The ultimate objective of the planning effort is completion of a strategic document which would prioritize juniper treatment areas and guide juniper management in the region for the next 20 to 25 years. Individual juniper management projects could then be assessed by tiering off the overall strategy.

## **Planning Proposal Analysis**

The map on the next page depicts an area near Likely, California. It displays the types of information that will be available for analysis in the proposed GIS including elevation, slope, aspect, juniper canopy cover and soil associations. Analysis of this data will enable interdisciplinary teams to assess juniper management options and priorities and to assess potential treatment impacts.

For example, a quick look at the map indicates an apparent burned area within soil types 268 and 179. The road up to the peak appears to have provided a firebreak leaving a light to moderate juniper cover on the western aspects of the 179 soil type and the northern portion of 268. These soils are moderately deep loams and cobbly loams with potential vegetation consisting of low sagebrush, Idaho fescue and bluebunch wheatgrass. Clearly, fire has played an integral role in this ecosystem in the past and should continue to play a role in future management scenarios.

Just to the north of the burned area, soil map unit 205 supports potential vegetation of ponderosa pine and white fir. The roads into this soil type may be indicative of previous timber harvesting activity. It would be useful to field check vegetation on this map unit to help differentiate between ponderosa pine or white fir canopies and western juniper canopy cover. Of course, timber stand health can normally be significantly improved by juniper removal.

To the south of the burned area, soil map unit 225 is a moderately deep, cobbly to rocky sandy loam that supports a juniper woodland vegetation type. This is the type of western juniper stand that might be best left alone. Steep slopes, highly erodible soils, habitat or aesthetic concerns, or the presence of cultural resources are all possible reasons for avoiding management impacts in a particular area.





These are just a few examples of how existing GIS data can assist in western juniper management planning. In landscape level strategy development a whole series of questions can be quickly asked and answered on a much broader scale. In addition, various types of vegetation and soils information can be readily extrapolated across the planning area to assist in the development of a wide array of juniper management planning alternatives.

## **Findings**

After a thorough review of the planning proposal and available data, RCI concludes that the proposal is not only feasible but long overdue. We applaud the coordinated approach being proposed by the BLM, USFS and North Cal-Neva RC&D and encourage continuation of their efforts.

The overall cost for development of the management strategy and EIS/EIR is estimated to be \$800,000. Some of these costs may overlap, however, we estimate that the management strategy can be developed for \$300,000 and the EIS/EIR for an additional \$500,000.

The timeframe for completion of the management strategy and EIS/EIR is estimated to be 24 months. It is envisioned that the management strategy could be completed within 12 months and the EIS/EIR within 18 months. There would be approximately 6 months overlap when both documents would be in progress simultaneously.

The 24-month estimate could vary depending on public and environmental sensitivity.

## **Contacts**

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